Unit 6
Day 3
Complex Fractions

32) $\frac{4}{(x+5)(x-5)} \cdot \frac{x^2-16}{(x+4)(x+4)} + \frac{2x^2+1}{(x+5)(x-4)} \cdot \frac{x^2-x-20}{(x-5)(x+4)} + \frac{-5x^2}{(x+4)(x-4)} \cdot \frac{x^2-25}{(x+5)}$

$\frac{4x^3-3x^2-64x+48}{(x+5)(x-5)(x-4)(x+4)} + \frac{2x^4-2x^3-39x^2-x-20}{(x+5)(x-5)(x-4)(x+4)} + \frac{-5x^4+125x^2}{(x+5)(x-5)(x-4)(x+4)}$

LCD $(x-5)(x+5)(x-4)(x+4)$

Def: Complex rational expression- is a rational expression that contains another rational expression in the numerator and/or the denominator

1)

$$\frac{\frac{1}{2}+\frac{2}{3}}{\frac{1}{3}} \cdot \frac{6}{6} = \frac{3+4}{2} = \frac{7}{2}$$

2) $$\frac{2-\frac{3}{x}}{1+\frac{1}{2x}} \cdot \frac{2x}{2x} = \frac{4x-6}{2x+1}$$

3) $\dfrac{3+\dfrac{1}{y-1}}{1+\dfrac{2}{y+1}} \cdot \dfrac{(y+1)(y-1)}{(y+1)(y-1)} = \dfrac{3(y+1)(y-1)+1(y+1)}{(y+1)(y-1)+2(y-1)}$

$= \dfrac{3y^2-3+y+1}{y^2-1+2y-2} = \dfrac{3y^2+y-2}{y^2+2y-3} = \dfrac{(3y-2)(y+1)}{(y-1)(y+3)}$

4)

$$\frac{\frac{5}{x^2+5x+6}-\frac{2}{x+3}}{\frac{x-1}{x^2-9}} = \frac{\frac{5}{(x+3)(x+2)}+\frac{-2}{(x+3)}}{\frac{x-1}{(x-3)(x+3)}} \cdot \frac{(x+3)(x+2)(x-3)}{(x+3)(x+2)(x-3)}$$

$$\frac{5(x-3)+-2(x+2)(x-3)}{(x-1)(x+2)} = \frac{5x-15+-2x^2+2x+12}{x^2+x-2}$$

(x^2-x-6)

$$= \frac{-2x^2+7x-3}{x^2+x-2}$$

5)

$$\frac{a^{-1}b + b^{-1}}{(ab)^{-1}} = \frac{\frac{b}{a} + \frac{1}{b}}{\frac{1}{ab}}$$

HOMEWORK:

P. 62: 77-82 (ALL)
WORKSHEET: 2-36 (EVEN)